

Lunar Halos.—1st, Me., Mich., N. H., N. J., N. Y., Pa., Vt., Va., Wis., N. M., La., Dak., Minn., Tenn., Conn., R. I. 2d, Ala., Ill., Ind., Me., Mass., Mich., Miss., Neb., N. J., Ohio, Idaho, N. M., Dak., Mo., Wis., Fla., Ga., R. I. 3d, Conn., Ill., Ind., Ia., Miss., Neb., N. J., N. Y., Cal., Ind. Ty., Dak., Tex., La., Mo., Wis., Ohio, Fla., Va. N. H. 4th, Neb., N. J., N. Y., N., C., Pa., Va., Col., Kan., Dak., Wis., Ohio, Ga., Md., Conn., Mass., N. H., R. I., Me. 5th, Ia., Me., Neb., Pa., Va., Wis., Idaho, Ind. Ty., N. C. 6th, Ohio, Vt., Idaho, Tex., Wis., N. H., Me. 7th, Ia., Me., Cal., Col., Tex., Dak., N. M., Ohio, Va., N. H. 8th, Ind., Mo., Dak., Tex., Wis., N. M., Ohio, Ky., Tenn., Vt. 9th, Ill., Ohio, Tenn., Va., Dak., Ia., Mo., N. Y. 10th, Ind., Mich., Ohio, Tenn., Va., Dak. 11th, Kan., Neb., Dak. 12th, N. M. 14th, Mo., N. Y., Tex. 15th, Ind. 23d, Vt. 24th, Pa., Nev. 25th, Mo., Nev., Col., Ga. 26th, Ia., Mo., Neb., Va., Cal., Col., Tex. 27th, Ind., Mass., Neb., N. H., N. J., N. Y., Ohio, Pa., Va., Cal., Col., Tex., Tenn. 28th, Mich., N. Y., Ohio, Pa., Va., W. Va.

Mirage.—New London, Conn., 24th; Pembina, Dak., 15th.

MISCELLANEOUS PHENOMENA.

BOTANICAL.—*Alabama*—Green Springs, in bloom, 1st, red maple, 20th, plums, 28th, peaches; 20th, quinces in leaf. *California*—Sacramento, in bloom, 16th, almond trees, 23rd, apricots, 28th, peaches and other fruit trees in bloom. Visalia, in bloom, 22nd, almond trees, 24th, peach. The past winter is considered to have been the severest on record throughout California, and the San Francisco Bulletin of February 13th, gives a very complete review by counties, of the reports of the owners of orange, lemon, lime and citron plantations. The uniform report is that in low valleys, and at a few extreme high elevations, the cold has been so severe as to injure or kill these trees, but that the vast majority of the plantations having been located on hillsides of moderate elevations, have not suffered seriously, and that the cultivation especially of orange and lemon is hereafter to be considered as no longer an experiment in California. The lowest temperatures recorded by thermometers were frequently not so destructive as the frosts that occurred when higher temperatures prevailed. Frequently severe winds intensified the injury due to low temperatures. *Florida*—Ft. Barrancas, in bloom, 2nd, peaches. Houston, in bloom, 10th, roses, 19th, wild plums, 21st peaches; 13th, farmers finished sowing oats; 25th, planting corn. *Georgia*—Forsyth, in bloom, 25th, peaches. St. Marys, in bloom, 10th, strawberries, 20th, peaches. Augusta, 15th, peach trees beginning to bloom; 24th, English peas up, and lettuce in the market. *Indiana*—St. Meinrad, 27th, peaches mostly killed; grass and wheat green and promising. *Iowa*—Ft. Madison 8th, horse-radish sprouting. *Kansas*—Cresswell, 18th, peach buds and trees killed. *Louisiana*—Okalooska, in bloom, 27th, plums and violets; 28th, peaches beginning to bloom, all vegetation ten to fifteen days later than last year. *Michigan*—Litchfield, 28th, peaches not killed, fair prospect for all kinds of fruit. *Mississippi*—Brookhaven, in bloom, 1st, yellow jessamine, 17th, maple, 18th, plums; 20th, peach buds swelling; 12th, crab-apple leafing. Fayette, in bloom, 21st, pears, 22nd, chinese quince, wild violets, slippery elm; 24th, wild plum and pitch pine. *Missouri*—Corning, 28th winter wheat in fine condition. Springfield, 28th rhubarb sprouting in the open air, blue grass and clover green, buds of early foliage bursting. Throughout the state complaints of injury to the peach crop are quite general. *Nebraska*—Clear Creek, 28th, farmers breaking and raking corn stalks preparatory to seeding. Howard, 28th, peach buds appear to be killed. *North Carolina*—Fayetteville, in bloom, 1st, japonicas and jonquils, 11th, hyacinths, 17th, flowering maple, 23rd, apricot; 11th, wheat crop fine, fruit of all kinds so far uninjured. *Ohio*—Bethel, 25th, maple sap running. *South Carolina*—Aiken, in bloom, 24th, peaches and plums. *Tennessee*—McMinnville, in bloom 16th, jonquils, lilacs budding. Chattanooga, in bloom, 21st, violets and crocus, 24th, forsythia. *Texas*—Melissa, 28th, ground too dry for oats to sprout, wheat needing rain very much. Austin, 28th, in bloom, peach and plums. Terrill, 20th, commenced planting corn. Gatesville, in bloom 22nd, peach and elm, grass growing. *Virginia*—Broad Oak, 28th, wheat and oats looking badly.

BIRDS.—*Martins*—Houston, Fla., 12th. *Blackbirds*—Dover Mines, Va., 22nd; Geneva, Neb., 22nd. *Geese*—Ft. Madison, Iowa, 11th, 24th; Oregon, Mo., 22nd, 23rd, 24th; Corning, Mo., 1st to 23th; Kansas City, Mo., 4th, 7th, 21st; Plattsmouth, Neb., 4th, 9th, 10th; Flushing, N. Y., 15th; Bethel, Ohio, 25th; Ringgold, Ohio, 25th; North Lewisburg, Ohio, 28th; Jacksonburg, Ohio, 28th; Melissa, Tex., 2nd, 18th; Dover Mines, Va., 23rd, 26th; Howard, Neb., 23rd; Sacramento, Cal., 4th, 7th, 16th; North Platte, Neb., 28th; Leavenworth, 22nd, large flocks; St. Marks, Fla., 22nd; Keokuk, 23rd; Lynchburg, Va., 7th. *Robins*—Topeka, Kan., 23rd; Sandy Springs, Md., 28th; Plattsmouth, Neb., 4th, (24th, in large numbers;) Flushing, N. Y., 16th, first appearance; Bellefontaine, Ohio, 2nd; Jacksonburg, Ohio, 25th; Ringgold, Ohio, 24th, 28th, in large numbers; Broad Oak, Va., 28th; Chattanooga, Tenn., 27th. *Woodpeckers*—Monticello, Iowa, 2nd, 15th, 24th. *Owls*—Monticello, Iowa, 1st, 6th; Uvalde, Tex., 16th. *Chickadees*—Monticello, Iowa, 9th, 20th, 23rd. *Prairie Chickens*—Corning, Mo., 1st to 28th. *Ducks*—Corning, Mo., 1st to 28th; Beloit, Wis., 28th. *Bluejays*—Rowe, Mass., 22nd, 25th; Niles, Mich., 3rd, 5th; Oregon, Mo., 3rd, 6th. *Wax Wings*—Rowe, Mass., 1st, 2nd, 4th, 7th, 13th, 17th, 22nd. *Bluebirds*—Somerset, Mass., 16th; Oregon, Mo., 3rd, 6th; Jacksonburg, Ohio, 5th; Melissa, Tex., 18th; Broad Oak, Va., 28th. *Hawks*—Corning, Mo., 1st to 28th. *Crows*—Corning, Mo., 1st to 28th; Linden, N. J., 10th, 28th; Princeton, N. J., 9th, 10th; Jacksonburg, Ohio, 28th. *Sparrows*—Bellefontaine, Ohio, 28th; Augusta, Ga., 27th. *Mocking Birds*—Melissa, Tex., 24th; Fayette, Miss., 28th. *Cedar Birds*—Dover Mines, Va., 15th to 28th. *Redbird*.—Oregon, Mo., 1st, 9th, 16th, 20th; Melissa, Tex., 22nd. *Meadow Larks*—Fallston, Md., 23rd.

MISCELLANEOUS.—*Frogs piping*—Louisville, Ill., 24th; Weldon, N. C., 11th, 25th. *Mosquitos*—Weldon, N. C., 25th. *Locusts*—Creswell, Kan., 23d. *Butterflies*—Fayette, Miss., 19th, 21st, 22d. *Bees*—Anna, Ill., 3d; St. Meinrad, Ind., 27th, young bees; Afton, Iowa, 21st; Litchfield, Mich., many swarms killed by the severe cold; Oregon, Mo., 2d, 3d, 7th, 21st; North Lewisburg, Ohio, 25th.

Meteors.—New Corydon, Ind., 14th, 18th; Cresco, Ia., 17th; Ft. Dodge, Ia., 19th; Woodstock, Md., 9th; Fayette, Miss., 1st, 19th, 24th, 27th; Clear Creek, Neb., 6th, 8th; Hector, N. Y., 15th; Palermo, N. Y., 15th; Ft. Davis, Tex., 20th, 8 p. m., very bright meteor, with long trail, from northeast to southeast of station, also on the 25th; Punta Rasa, 18th, unusual number observed moving from NE. to SW; North Lewisburg, Ohio, 28th; Wytheville, Va., 14th; Indianola, Tex., 21st, 7:20 p. m., very brilliant meteor about 25° from zenith, moving to the SE.; length of path 30° or 35°; exploded at about middle of path; duration, five or six seconds; Knoxville, 26th, 9:40 p. m., very bright meteor observed 55° above the south horizon, moving SW., disappearing at about 25° above horizon; Atlantic City, N. J., 14th, 9:30 p. m., very brilliant meteor descended from a point 20° NE. of zenith; no train or fragments. Iowa, on the 17th, at 7:30 p. m., a very bright meteor was seen in Howard, Gasper and Wayne counties.

Zodiacal Light.—Southington, Conn., 9th, 12th, 15th, 21st, evenings; New Corydon, Ind., 8th, 9th, 13th, 14th, 22d, 23d, evenings; Cresco, Iowa, 8th, 13th, 14th, 15th, 16th, 21st, 22d, evenings; Monticello, Iowa, 8th, 13th, 14th, evenings; Mechanics Falls, Me., 19th, evening; Cambridge, Mass., regularly looked for each evening at 8 p. m., except the 10th; visible 9th, 12th, 13th, 14th, 15th, 21st; observations hindered by moonlight or clouds, 1st to 8th, 11th, 16th to 20th, 22d to 28th; Somerset, Mass., 9th, 10th, 12th, 14th, 15th, 21st, evenings; Fall River, Mass., 8th, 9th, 14th, 15th, 16th, evenings; Rowe, Mass., 14th, 15th, 19th, evenings; Corning, Mo., 8th, 13th, 20th, 22d, evenings; Oregon, Mo., 13th, 14th, 19th, 20th, 23d, evenings; Clear Creek, Neb., 8th, 9th, 13th, 14th, 19th, 21st, 22d, 23d, evenings; Contoocookville, N. H., 8th, 12th, 19th, 21st, evenings; Freehold, N. J., 21st, evening; Atco, N. J., 8th, 9th, 14th, 15th, 18th, 21st, 23d, 28th, evenings; hindered by clouds or moonlight, 1st to 7th, 10th, 11th, 12th, 13th, 16th, 17th, 19th, 20th, 22d, 24th, 25th, 26th, 27th; Princeton, N. J., 8th, 21st, 23d, evenings; Waterburg, N. Y., 9th, 13th, 14th, 15th, 16th, 21st, 22d, evenings; Argyle, N. Y., 13th, 14th, 15th, 21st, evenings; Cape Vincent, N. Y., 24th, 27th, 28th, evenings; Fayetteville, N. C., 12th, 13th, 14th, 18th to 21st, evenings; Bellefontaine, Ohio, 9th, 15th, 22d, evenings; New Ulm, Tex., 8th, 12th, 19th, 20th, 26th, evenings; Wytheville, Va., 13th, 14th, 15th, 18th, 21st, 23d, evenings; Pikes Peak, looked for, but not observed, 1st to 19th, 22d, 23d, 25th, 26th, 28th; observed on the 20th, 21st, 27th, evenings; 24th, in the morning; Colorado Springs, looked for, but not observed, 1st to 28th; Keokuk, 9th; New Haven, Conn., 24th, evening; Mt. Washington, looked for, but not observed, 1st, 2d, 3d to 28th. In Iowa it was observed on ten evenings.

Polar Bands.—New Corydon, Ind., 9th, 22d; Gardiner, Me., 1st, 7th, 22d, 25th; Oregon, Mo., 14th; Clear Creek, Neb., 3d, 4th, 8th, 9th, 15th, 18th, 19th, 22d, 27th; Freehold, N. J., 3d, 14th, 21st, 24th; Vineland, N. J., 27th; Thornville, Mich., 3d, 24th, 27th; Wytheville, Va., 7th, 9th, 10th, 14th, 16th, 26th, 27th; Fancy Gap, Va., 27th, Pembina, Dak., 3d

Prairie and Forest Fires.—Houston, Fla., 22nd, 27th; Creswell, Kan., 7th, 8th, 9th, 11th, 12th, 13th, 14th, 17th to 22nd, 24th, 26th, 27th, 28th; Colorado Springs, Col., 24th; Dodge City, Kan., 21st; Yankton, 2nd, 3rd, 7th, 8th, 9th, 10th, 22nd, 23rd, 28th; Corsicana, Tex., 22nd, 26th; St. Marks, Fla., 1st; Independence, Kan., 2nd, 3rd, 9th, 11th, 12th, 14th, 19th to 28th; Graham, Tex., 8th, 9th, 10th, 22nd, 23rd, 24th, 27th.

Earthquakes.—*January*—U. S. Naval Hospital, Yokohama, Japan, 3rd, 9h. 58' a. m., sharp shock, lasting three seconds. *February*—Visalia, Cal., 4th, 0h. 8' a. m., shock lasting five seconds, preceded by peculiar rumbling noise; 0h. 8' 7" a. m., second shock, much heavier than first, lasting nine seconds; the motion appeared to come from the SE. or E. This shock was felt all over the surrounding country, in many places cracking the walls and upsetting the furniture.

Sunsets.—The characteristics of the sky at sunset, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Corps stations. Reports for 124 stations show 3,435 observations to have been made, of which 57 were reported doubtful; of the remainder 2,825, or 82.2 per cent., were followed by the expected weather.

Sun Spots.—The following monthly record of observations by Mr. D. P. Todd, Nautical Almanac office, Washington, D. C., is communicated by Prof. S. Newcomb, U. S. Navy, in charge of that office:

FEBRUARY, 1879.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Remarks.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
3rd, 3 p. m.	0	0	0	0	0	0	0	0	Spots small and faint.
4th, 2 p. m.	0	0	0	0	0	0	0	0	
7th, 4 p. m.	0	0	0	0	0	0	0	0	
8th, 3 p. m.	0	0	0	0	0	0	0	0	
13th, 2 p. m.	0	0	0	0	0	0	0	0	
14th, 3 p. m.	1	2	0	0	0	0	1	2	
16th, 2 p. m.	0	0	0	0	0	0	1	2	
18th, 3 p. m.	0	0	0	0	0	0	0	0	
20th, 3 p. m.	0	0	0	0	0	0	0	0	
21th, 3 p. m.	0	0	0	0	0	0	0	0	
25th, 3 p. m.	0	0	0	0	0	0	0	0	
27th, 3 p. m.	0	0	0	0	0	0	0	0	
28th, 3 p. m.	0	0	0	0	0	0	0	0	

Mr. William Dawson, at Spiceland, Ind., examined the sun on the following days, but observed no spots: 2nd, 3rd, 4th, 7th, 8th, 9th, 13th, 18th, 20th, 22nd, 23rd, 26th, 27th and 28th; on the 14th four spots and one group were seen, 15th, seven spots and one group, 25th, four spots and one group. Mr. David Trowbridge, at Waterburg, N. Y., examined the sun on the 7th, 8th, 9th, 10th, 14th, 15th, 19th, 24th, 27th and 28th, but observed no spots. Mr. H. D. Gowey, at North-Lewisburg, Ohio, reports no sun-spots during

the month. Prof. Gustavus Hinrichs, of Iowa City, Iowa, observed the sun's disk on fourteen days, but saw no spots. Observations were also continued at Fort Whipple, Va., but no spots reported.

NOTES AND EXTRACTS.

Dr. Köppen, of the *Deutsche Seeverte*, publishes the following note on the mean pressure of the atmosphere in the interior of Asia: "The two most important features in the geographical distribution of the mean pressure of the atmosphere are, first, the maximum which through the whole year lies in the neighborhood of 30° to 35° north (and south) latitude on the oceans and the west coasts of the continents; and, 2nd, the inverse relations of the continents and oceans of the temperate zones, especially the winter maximum of pressure in the interior of the continents. While there is little difficulty in determining the details of the first-named feature, since it comes directly to the knowledge of every observing navigator and without further discussion of his observations, although its theoretical explanation still leaves much to be desired—yet in respect to the second feature it is quite the reverse. The origin of this feature is easily understood as due to the great contrasts of temperature between the continents and neighboring oceans. For 40 years it has been known that the barometric pressure in southern Siberia averages twenty millimeters and more, less in summer than in winter. But on account of the entire absence of measures of altitude in Siberia, determined independently of atmospheric pressure, it was not possible to accurately determine the differences in the pressure in the interior and on the coasts, or to reduce the pressure in the interior to sea-level. This uncertainty has lately been removed by the results of the Levelling Expedition conducted eastward to the sea of Baikal, at the suggestion and under the direction of the Imperial Russian Geographical Association. Some of these results have been published by Woeikof, and show that all previous assumptions as to the high pressure in winter in southern Siberia, were considerably below the truth. Thus, the normal pressure for January, in the region east of Lake Baikal, becomes 778 millimeters, (30.63 inches,) or higher than any where else outside of Asia; and individual maxima above 800 millimeters, (31.50 inches,) frequently occur.

A *Magnetic Storm* occurred May 14th, of which accounts have been published from various stations where regular recording instruments are kept in action. It began as shown in the following table, where the times are reduced to Greenwich:

Name.	Date.	Declination.	Horizontal Force.	Vertical Force.
Greenwich	14th	6 h. 5 m., a. m..
Stonyhurst.....	„	6 h. 4 m., a. m..
Zikawei.....	„	6 h. 4 m., a. m..
Melbourne	„	6 h. 20 ⁹ m., a. m..
Madison, Wis.....	„	5 h. 58 m., a. m..	6 h. 3 m., a. m....	7 h. 8 m., a. m....

It is not stated how much the sluggishness of the recording magnet, or other instrumental error, may have affected these figures, but it is evident that the disturbance was nearly simultaneous throughout the world, and that any investigation into the origin of such disturbances will require the use of apparatus that will record to seconds of time rather than to minutes.

Observations of Temperature at Distant Places.—The following apparatus is adopted for keeping a record not only of underground temperatures, but by a slight modification it allows of observing the temperature of the air at points upon mountain-tops or in stationary balloons:

Several instruments have been contrived which, when buried in the earth, with wires coming from them to the surface, admit of having their temperatures observed by electrical means.

One of these is Siemens' resistance thermometer, another is Wheatstones telegraphic thermometer, of which a description will be found in the Report of the Dundee Meeting of the British Association; another is Becquerel's thermo-electric apparatus, which has been employed by its inventor and his son and grandson for some forty years. It is described in the following terms in the first Report of this Committee (1868):

"The thermo-electric method might also be followed with great advantage. Two wires, one of iron and the other of copper, insulated by gutta-percha or some other covering, as in submarine cables, and connected at their ends, might be let down so as to bring their lower junction to the point where the temperature is to be taken, their upper junction being immersed in a basin of water, and the circuit completed through a galvanometer. The temperature of the water in the basin might then be altered till the galvanometer gave zero indication."

Sir Wm. Thomson now adds the recommendation that, in carrying out this method, the two wires, each well covered with gutta-percha, should be twisted together; that the wires should be stout and as homogeneous as possible throughout, and that a piece of stout copper tube should be attached to the lower junction, this tube being uncovered and in close contact with the earth all round, its purpose being to insure that the junction takes the proper temperature.

It would probably be desirable, in filling up the bore, to mix clay with the original material to render it watertight, for it would be impossible to render the filling of the bore as compact as the surrounding rock.